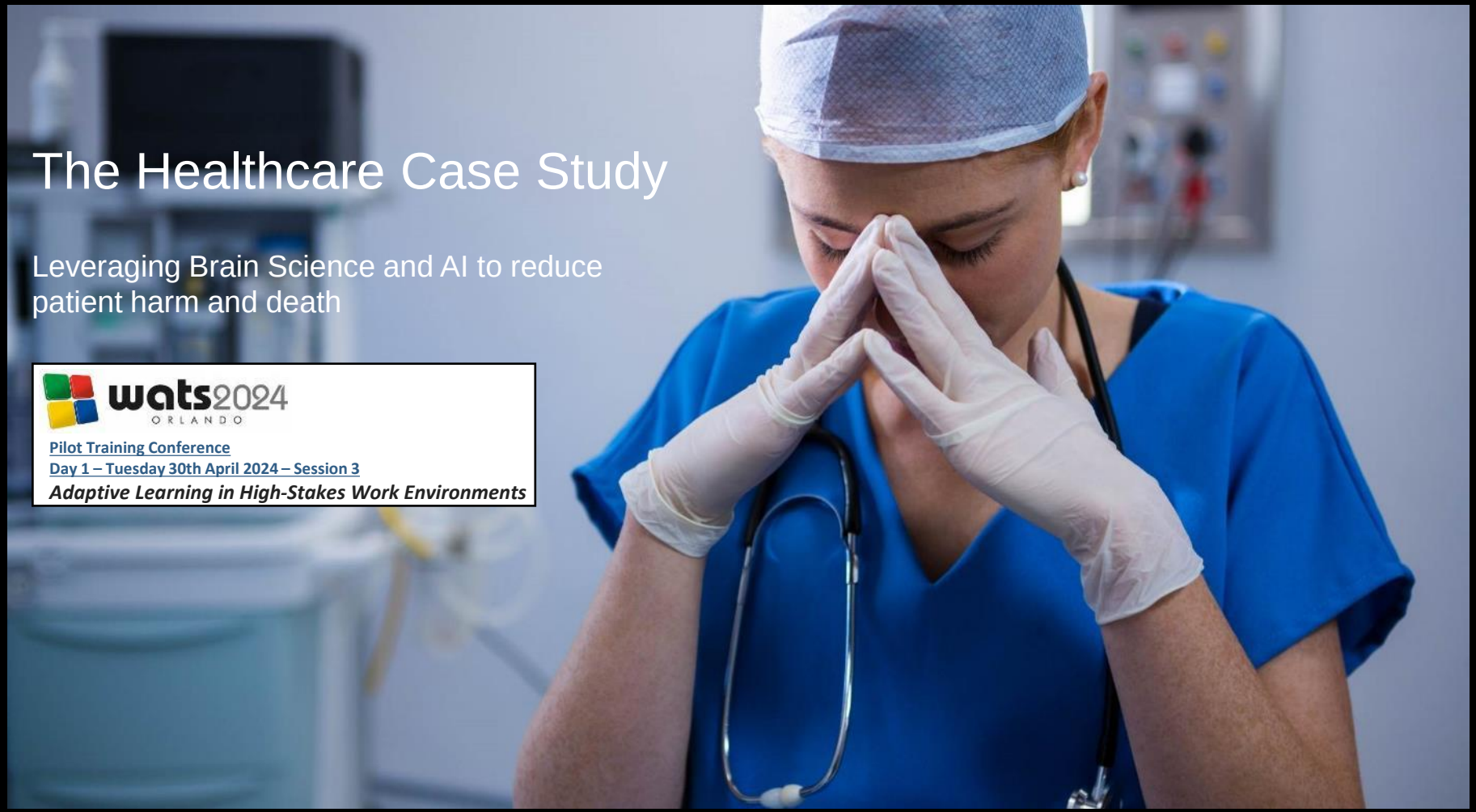
# The Healthcare Case Study

Leveraging Brain Science and AI to reduce patient harm and death



wats2024 ORLANDO

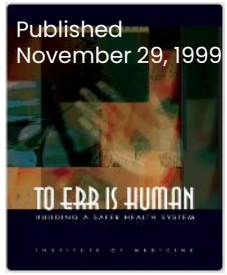
Pilot Training Conference

Day 1 – Tuesday 30th April 2024 – Session 3

***Adaptive Learning in High-Stakes Work Environments***

# “Islands of excellence surrounded by oceans of mediocrity”






**268**

Avoidable Deaths per day

National Institutes of Health

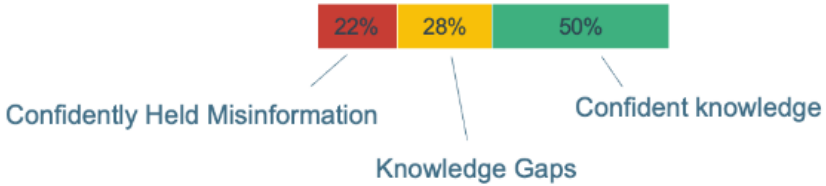
NIH National Center for Complementary and Integrative Health

2023 Estimate

**328**

Avoidable Deaths per day

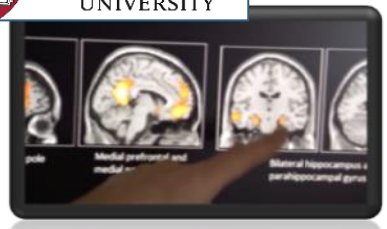
Typical Knowledge Across MD’s, Nurses and Technicians



# “Islands of excellence surrounded by oceans of mediocrity”



HARVARD UNIVERSITY



UW Medicine
Providence
UMass Memorial Health
Lehigh Valley Health Network
Mass General Brigham
Froedtert
AHN
MedStar Health
Intermountain Health
University Hospitals
CommonSpirit
PennState Health
uchealth
Cleveland Clinic
ALAMEDA HEALTH SYSTEM
SCL Health
MERCY HEALTH
Community Health Network
VA U.S. Department of Veterans Affairs
Stanford MEDICINE
Wellstar
Atrium Health
Scripps
Banner Health
BaylorScott&White HEALTH
Northeast Georgia Health System
Texas Health Resources
THE UNIVERSITY OF TEXAS MD Anderson Cancer Center
SIMEDHealth
HAMILTON HEALTHBOX
Ochsner Health
TGH Tampa General Hospital
UFHealth

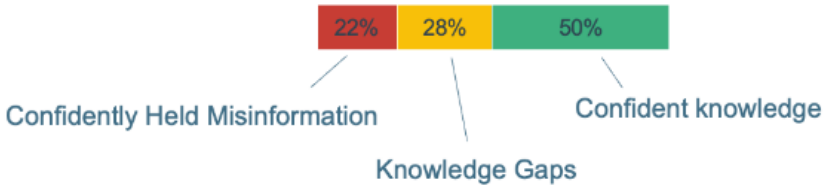
**>50%**

Reduction in training time

**~80%**

Reduction in Patient Harm

Typical Knowledge Across MD’s, Nurses and Technicians



# Advanced Brain Science of Human Learning



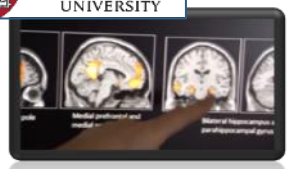
1953
27 years old

Henry Molaison (“HM”)

82 years old

Hippocampus

All new memory (learning)
is created in the Hippocampus
and distributed for storage
during sleep.




# Advanced Brain Science of Human Learning



## 1992

First fMRI Images published

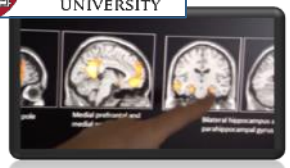
Massachusetts General Hospital
Founding Member, Mass General Brigham

ADVANCES IN MOTION

HARVARD
UNIVERSITY

Kenneth Kwong, PhD

Associate Professor, Martinos Center for Biomedical Imaging,
Massachusetts General Hospital

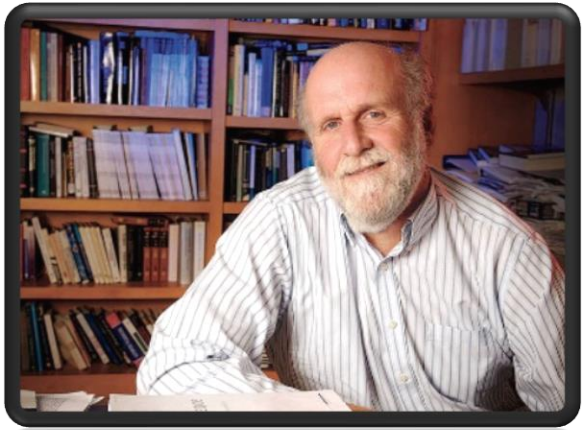


# Advanced Brain Science of Human Learning



## 1993

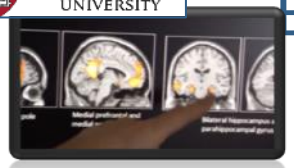
Dan Schacter, PhD



1953 “HM”

# Engaging the Neuro Mechanics of Human Learning





2011

**Robert Bjork, PhD, UCLA**
Bjork Center of Learning and Forgetting

**Dan Schacter, PhD**

**Rich Mayer**
PhD, UCSB

**Roddy Roediger**
PhD, Washington University at St. Louis

**Robert Birnbaum**
PhD, MD, Vice President of Professional Development & Implementation Science at Mass General Brigham

**Elizabeth Bjork**
PhD, UCLA

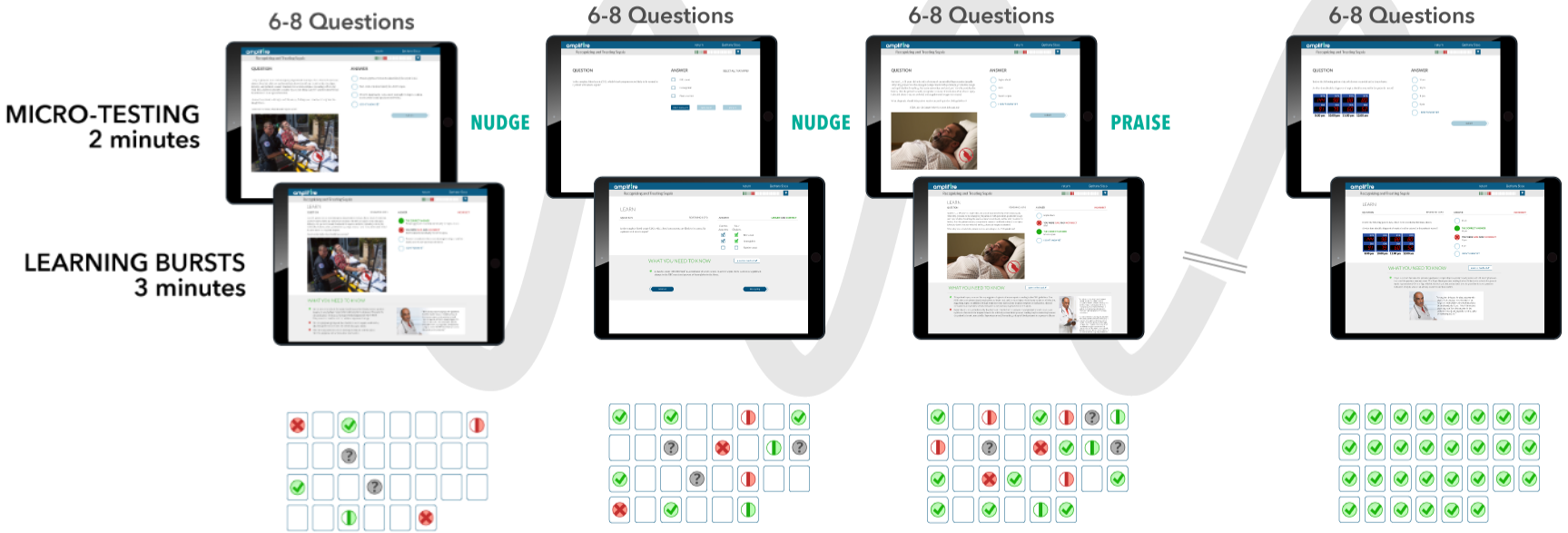
**Kathleen McDermott**
PhD, Washington University at St. Louis

**Chad Lane**
PhD, University of Illinois

**"Triggers & Switches"**

Repetition
Emotion
Elaboration Attention
Salience Retrieval
Priming
Feedback
Spacing
Honesty
Motivation

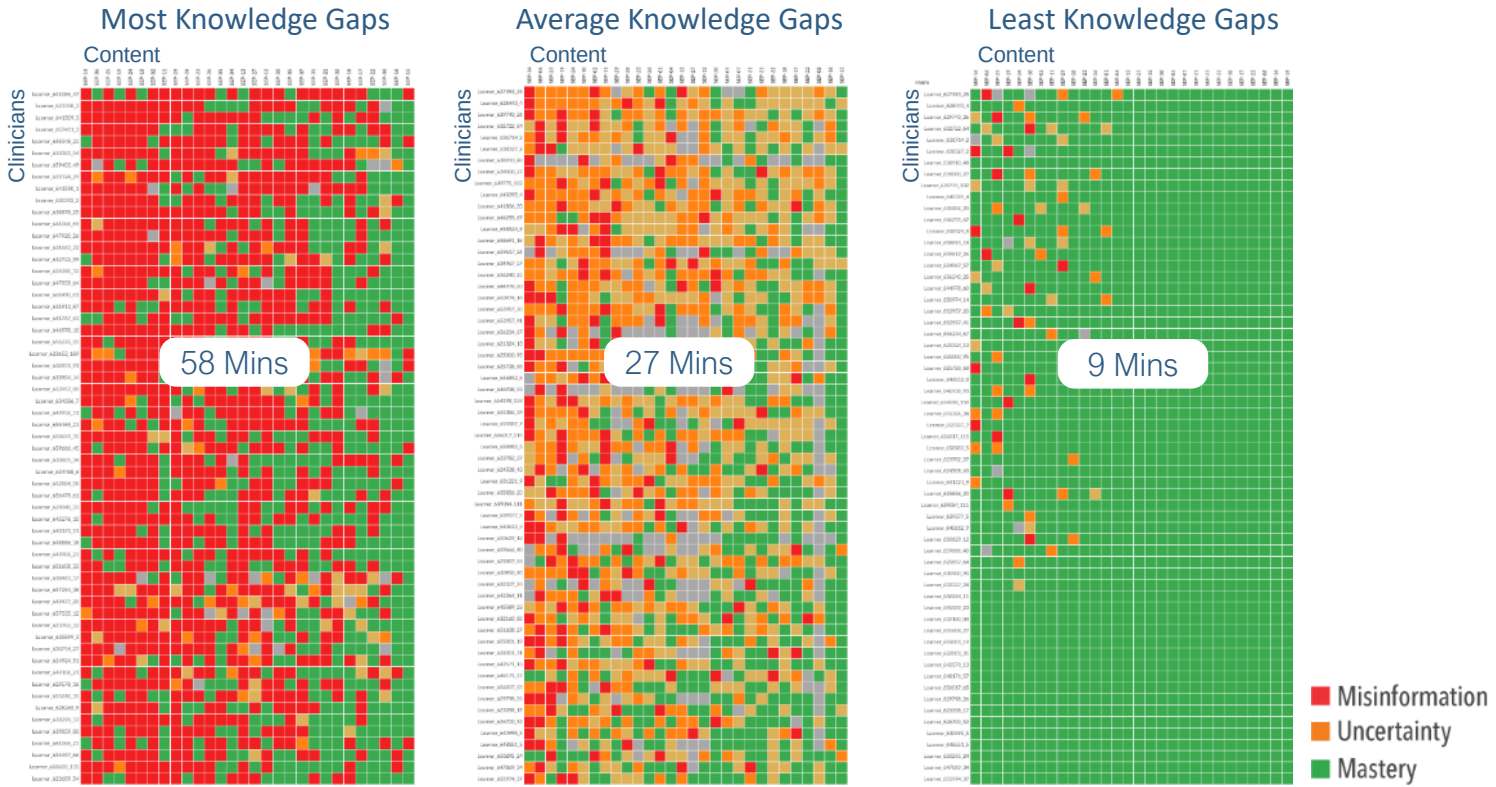
2 Million learners per year
4.3 Billion Learner Interactions


6-8 Questions
6-8 Questions
6-8 Questions
6-8 Questions
MICRO-TESTING
2 minutes
LEARNING BURSTS
3 minutes
NUDGE
NUDGE
PRAISE

# Advanced Visual Analytics



Training Efficiency: 3,700 Nurses at 21 Hospitals—CLABSI



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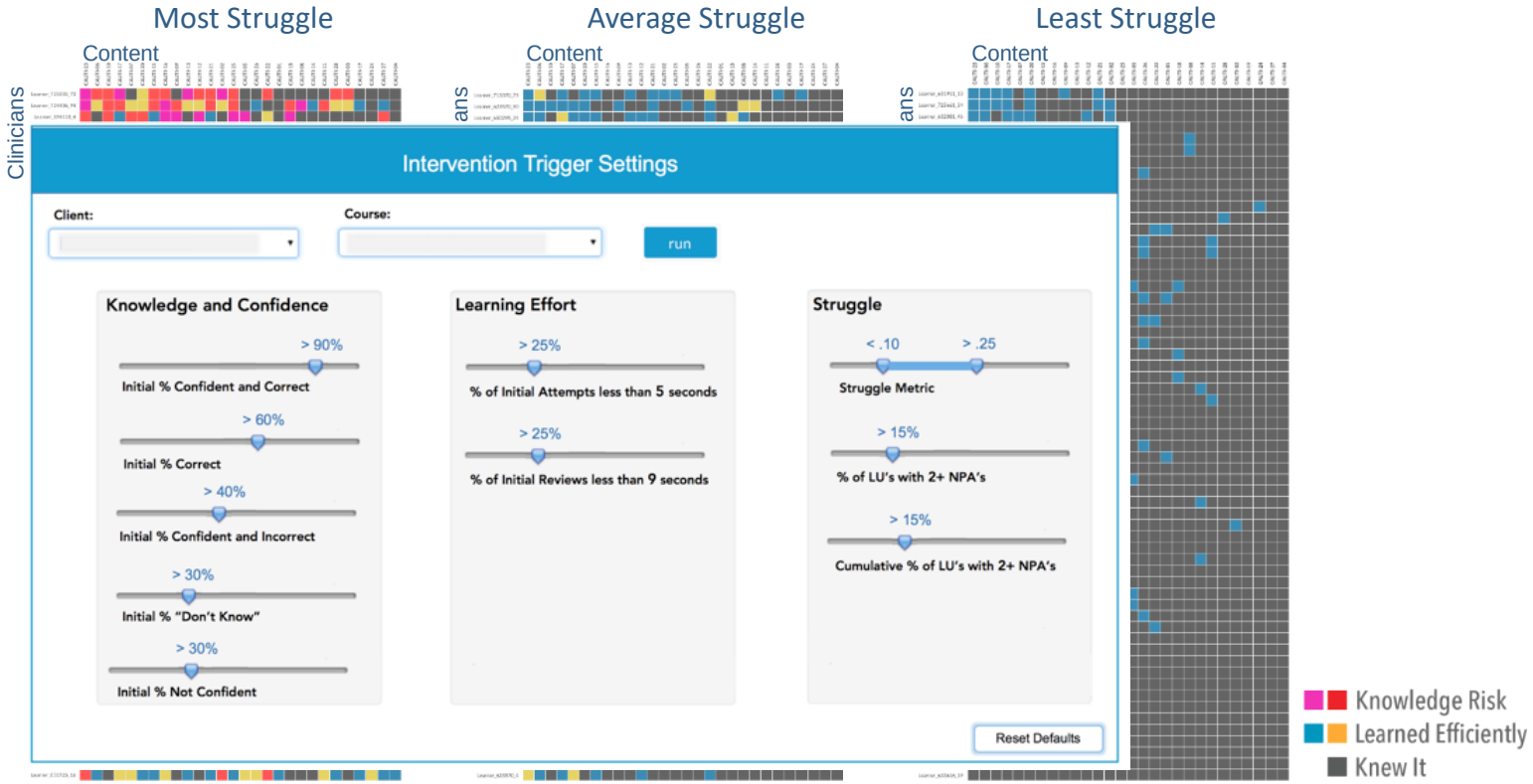


# Advanced Visual Analytics



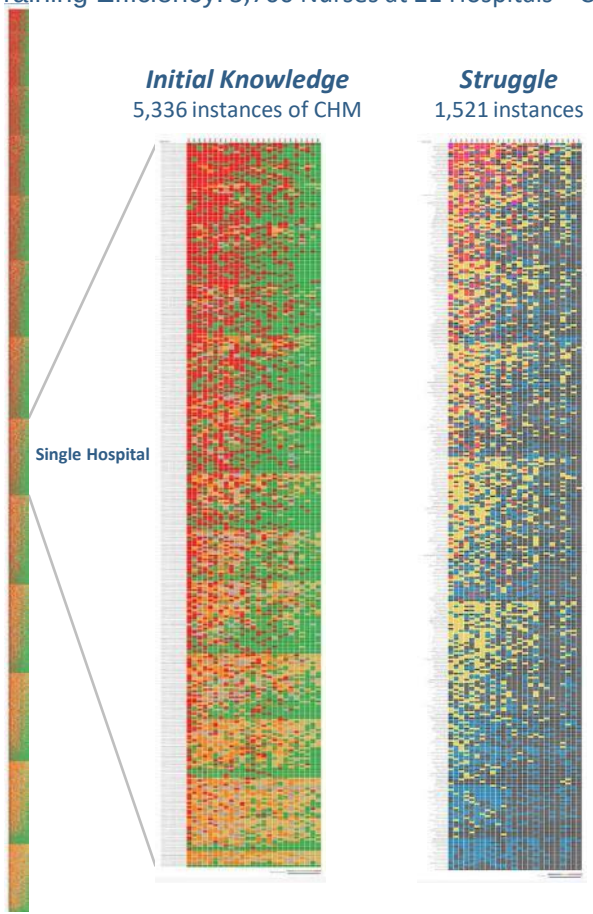
Training Efficiency: 3,700 Nurses at 21 Hospitals—CLABSI

- **23 Intermountain hospitals**
- **3,707 nurses trained**
- **25,129 instances of CHM**
- **29,838 instances of Uncertainty**

# Advanced Visual Analytics



Training Efficiency: 3,700 Nurses at 21 Hospitals—CLABSI



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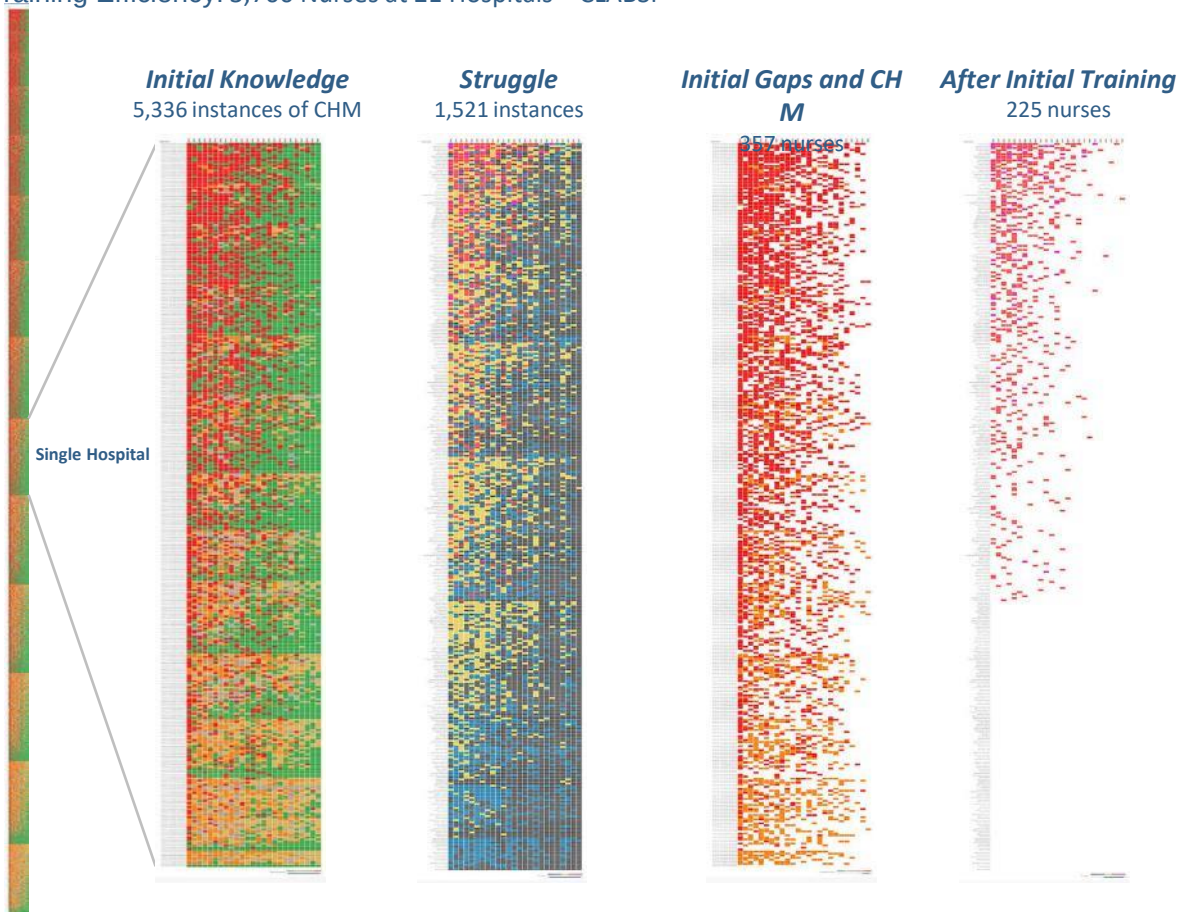

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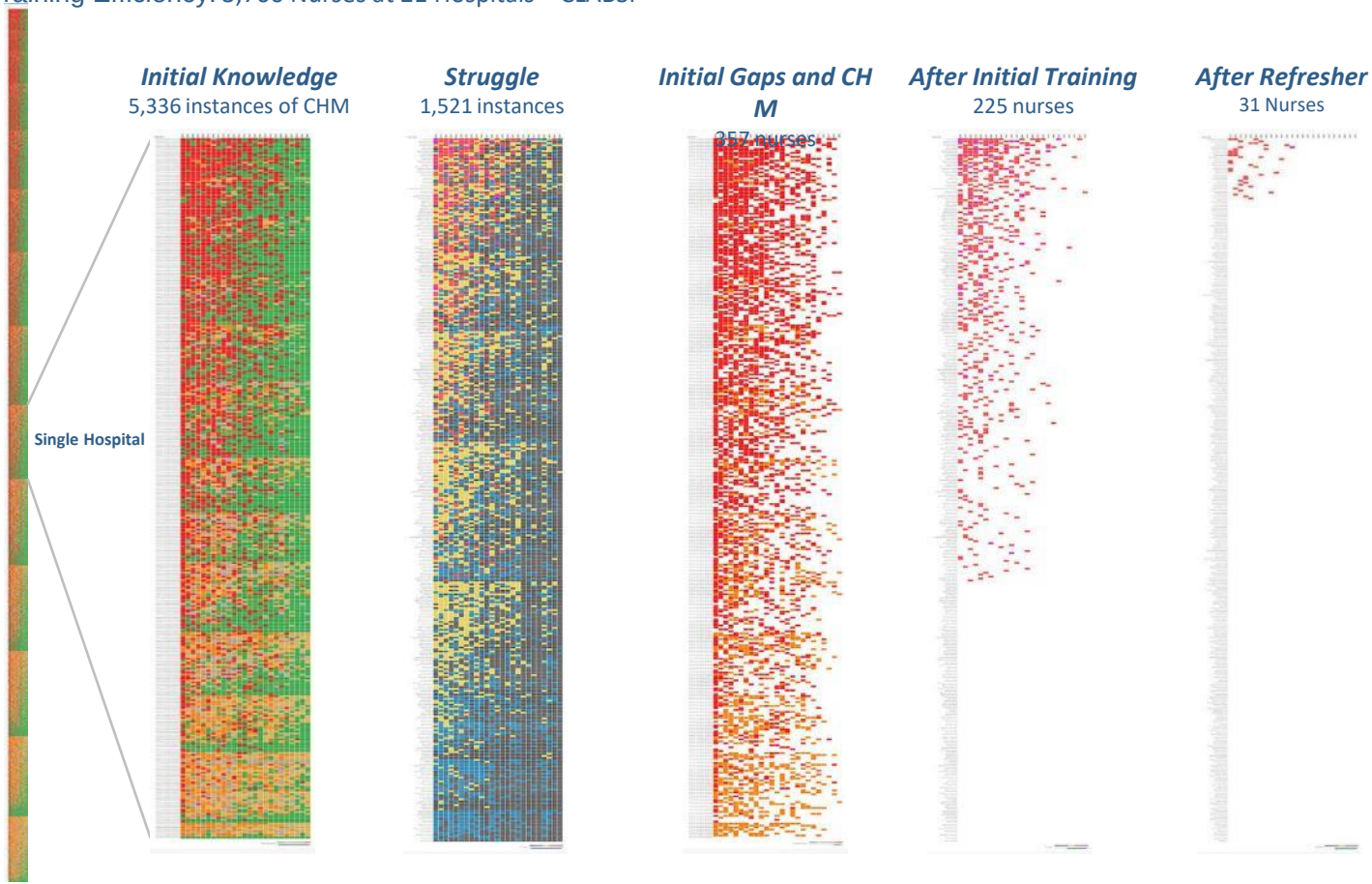

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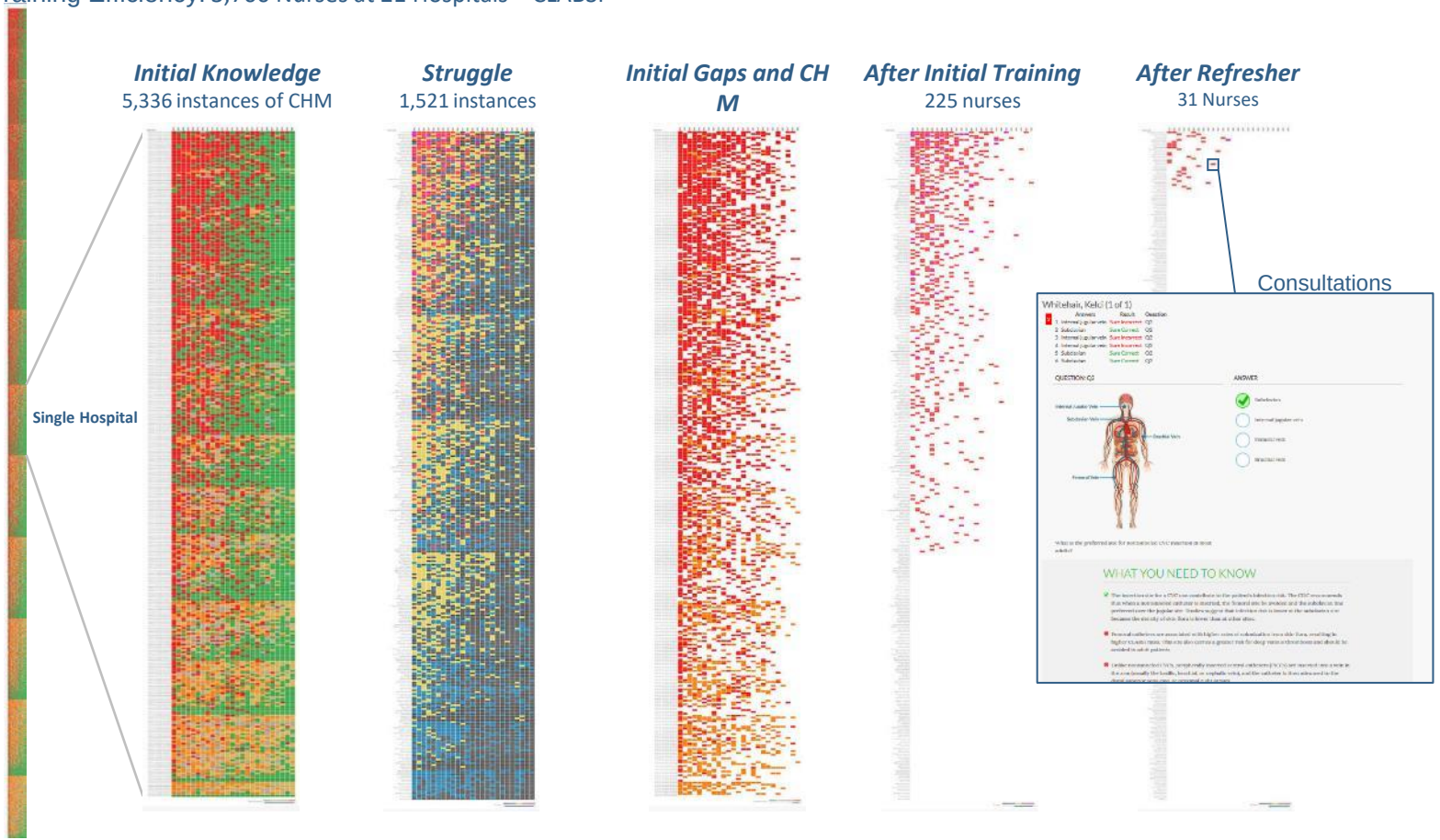


# Results/Outcomes

- Amplifire CLABSI course, modified for SCL Health policies, procedure, and products
- Additional education tailored to common knowledge gaps

Identified and remediated knowledge gap and CHM in our staff

Data provided by SCL Health

Amplifire CLABSI Training Rollout

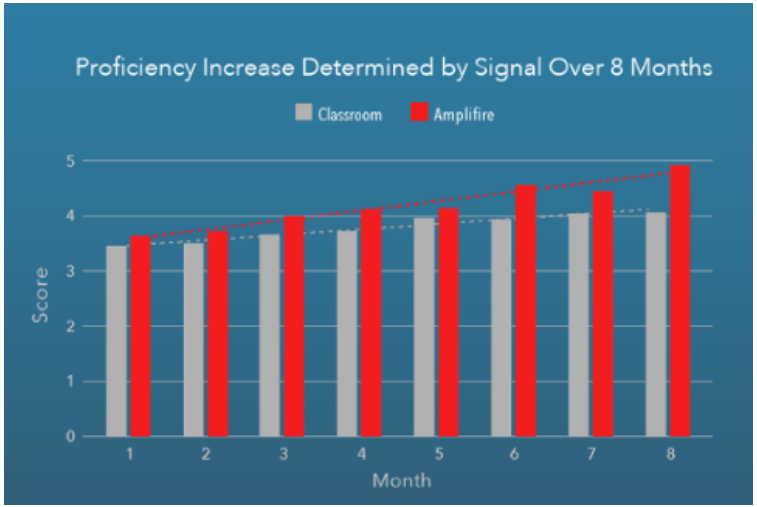
Confidential – Do not duplicate or distribute without written permission from Amplifire

# EHR Onboarding Training



**8 Hrs.**
Classroom Training

**1 Hr. 5 mins**
Adaptive Platform Training




**19.8%**
Improved Proficiency

Providence

**44,000**
Hours returned to clinical care in 8 moths

Scripps

**28,000**
Hours returned to clinic al care in 2022

# Medivac Pilot Training

# Taking on Medivac Pilot Training



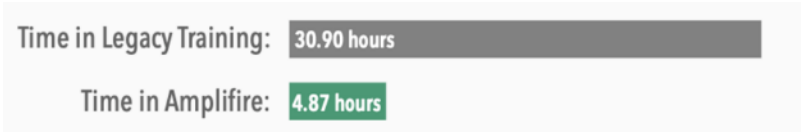
**84%**

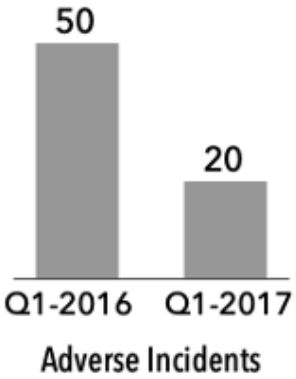
reduction in Training Time

**60%**

reduction in Adverse Incidents

FAA Mandatory Training

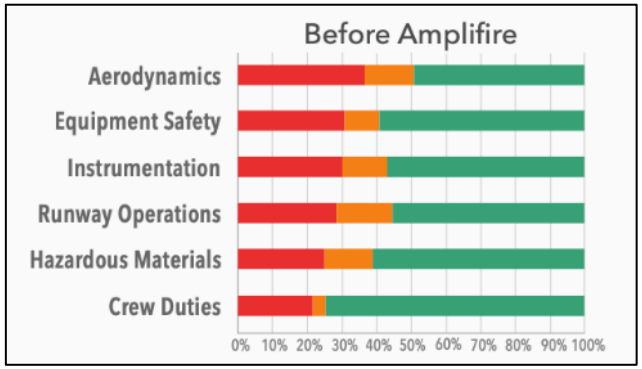


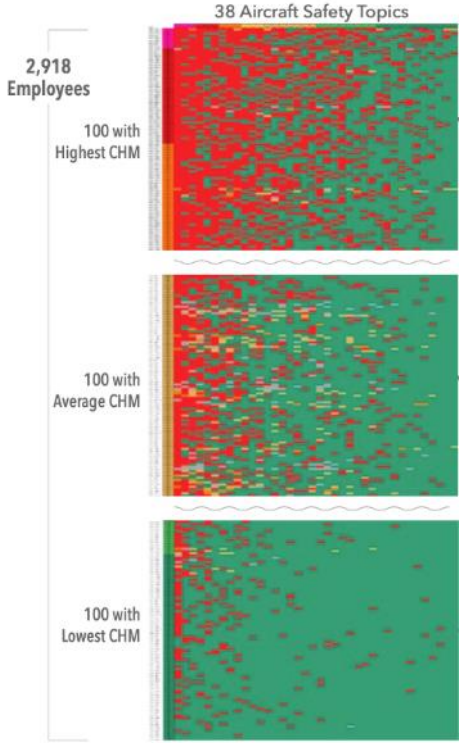



# Taking on Medivac Pilot Training



FAA Mandatory Training



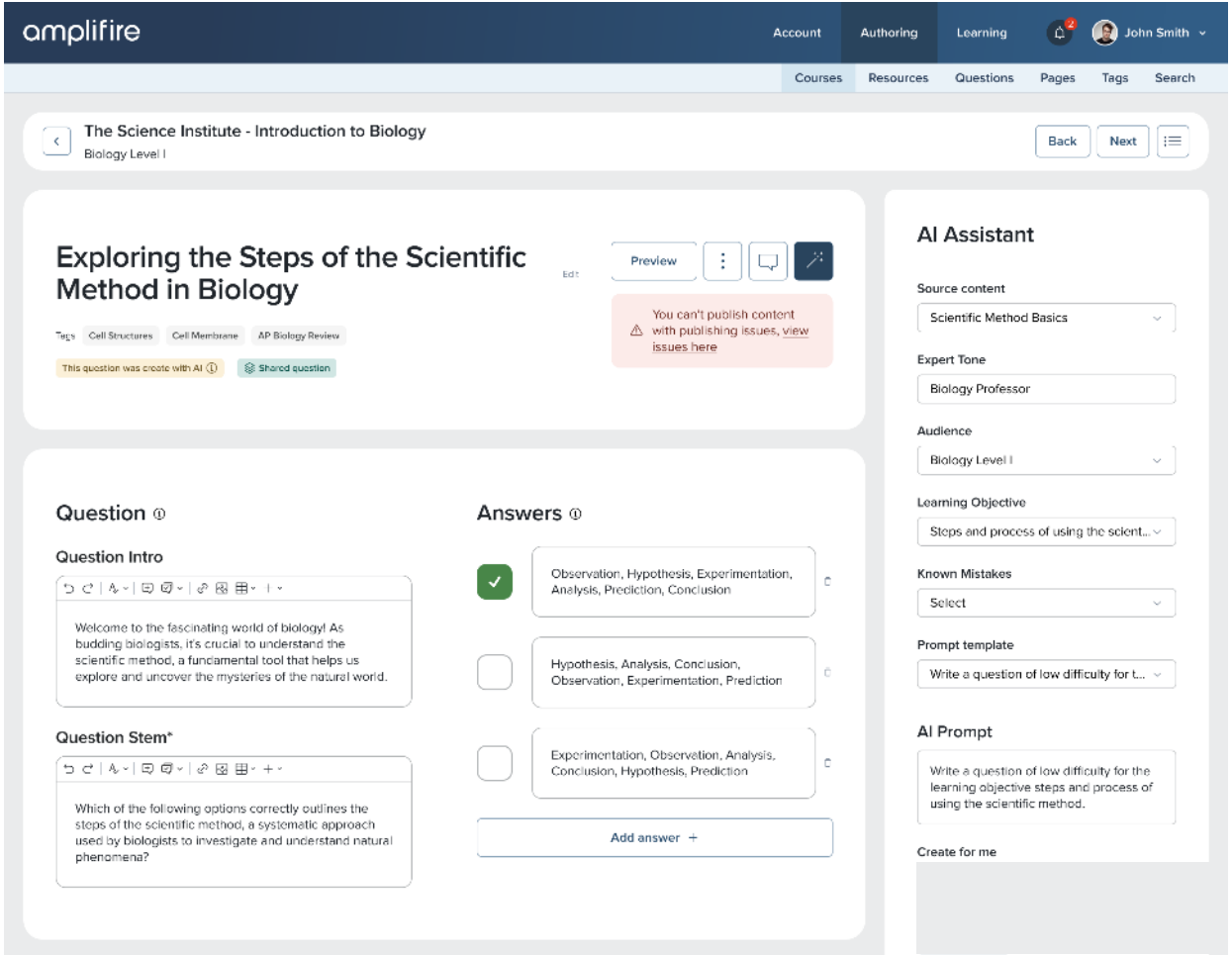

**82%**

Retention at 12-months

# Embedded AI



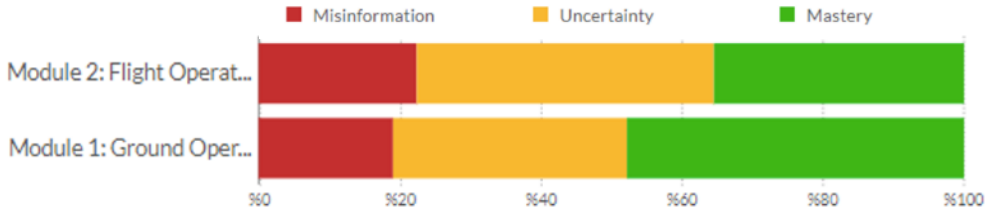
## AI Content Assistant

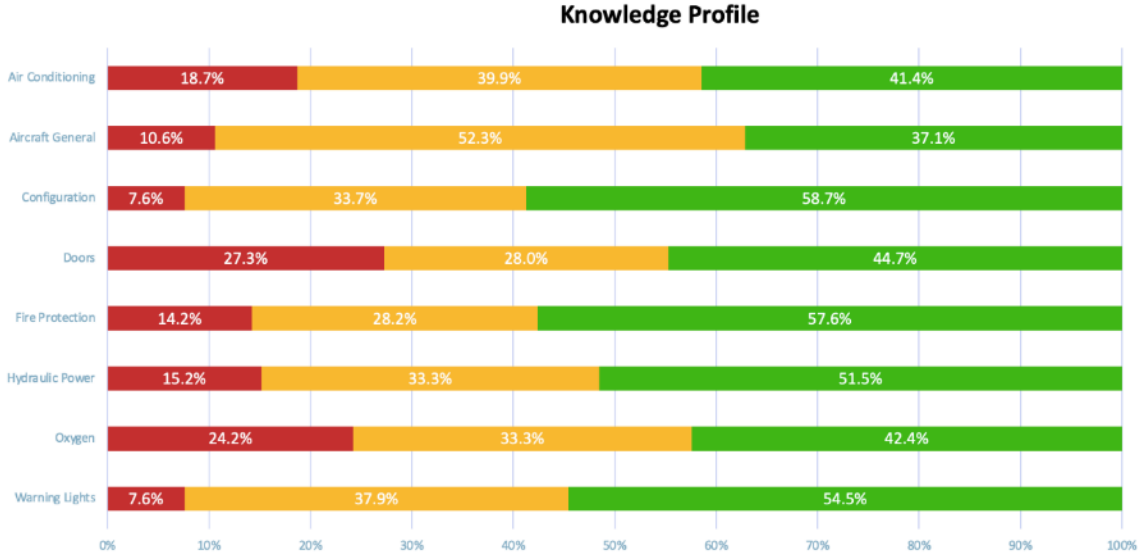


# Boeing 737 Max Return to Service

# Regional Carrier:  Boeing 737 Max Return to Service





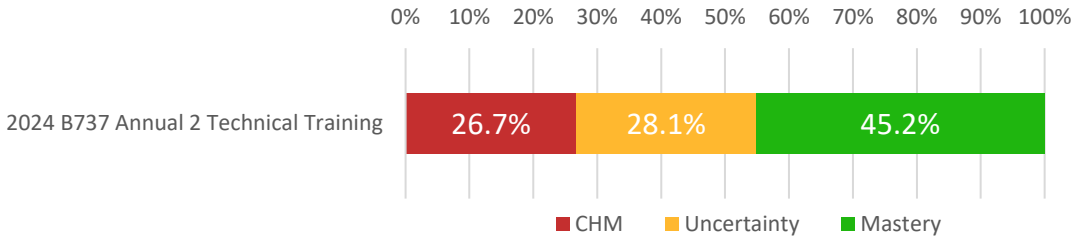

**2,152**
Pilots

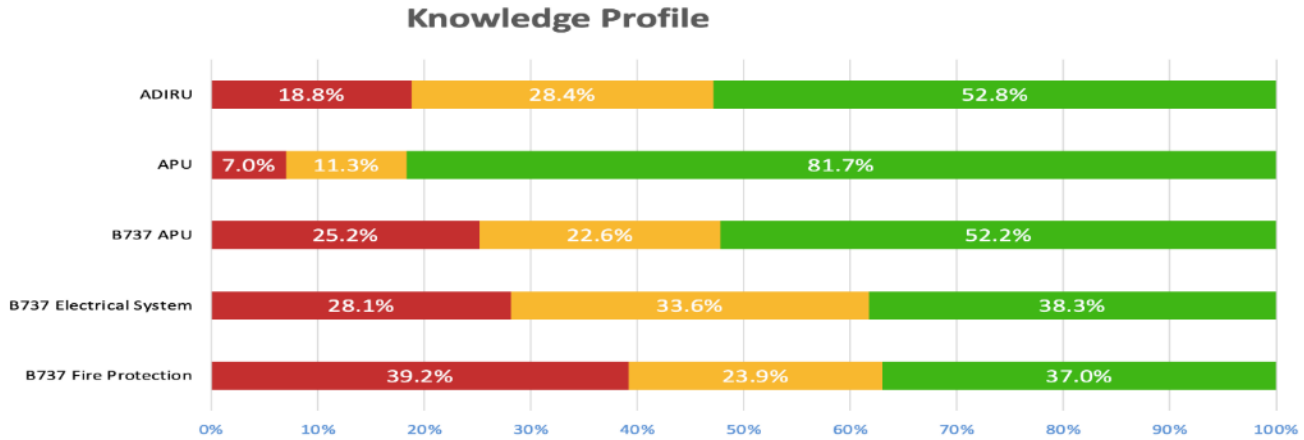
**40 minutes**
on average to complete.

# 2024 B737 Annual AGT



December 2023 –March 2024



# Airforce Pilot Training

wats2024 ORLANDO

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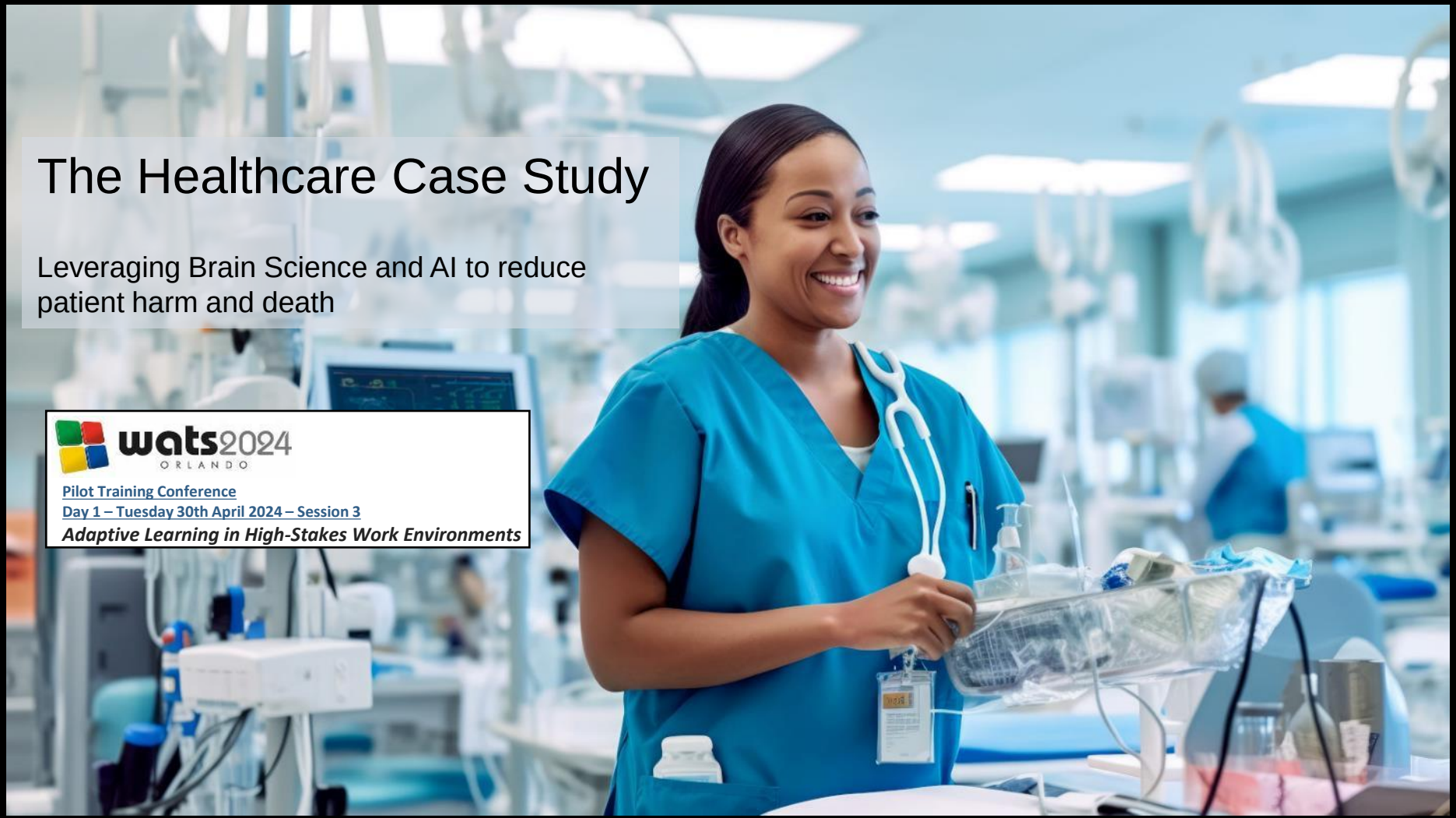

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